HORIBA Measurement technology that contributes to air pollution control and CO2 capture

HORIBA, Ltd
Energy & Environment Strategy Office
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HORIBA

Overview

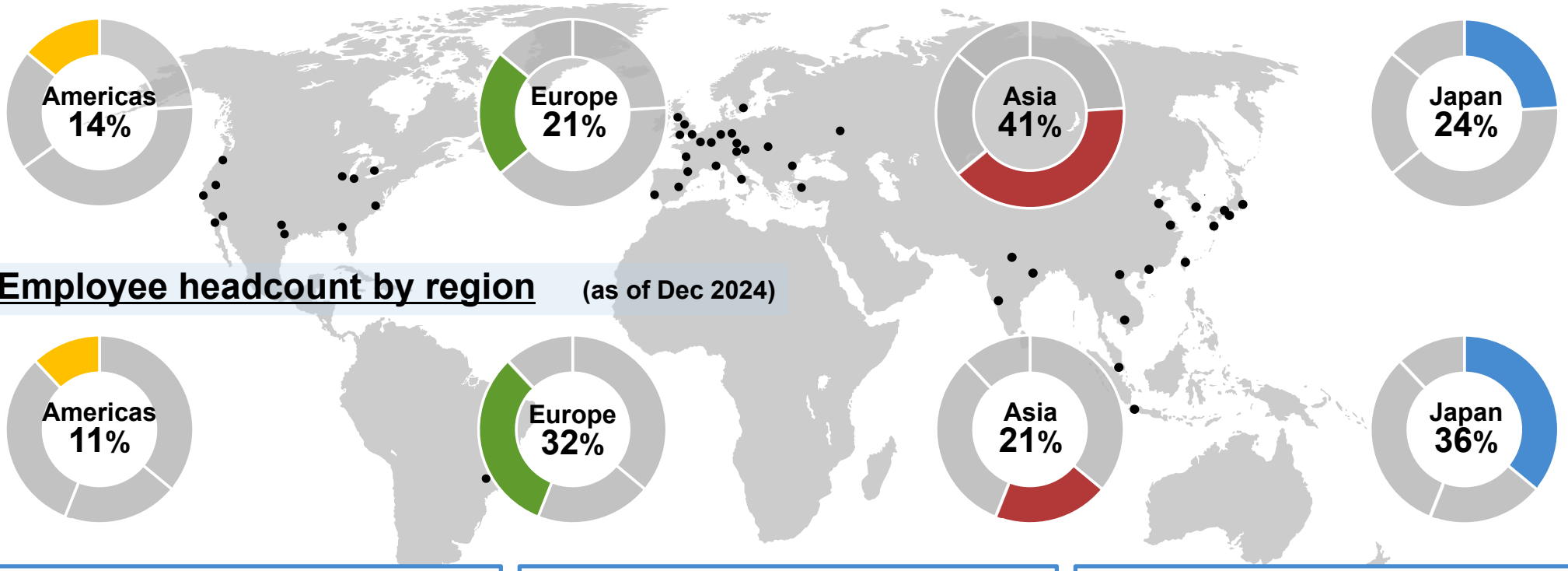
Line of Business	R&D, Manufacturing, Sales, Services of analysis and measurement equipment
Head Office	Kyoto, Japan
Founded	October 17, 1945
Incorporated	January 26, 1953
Net sales	317.3 BJPY (FY2024)
Number of Employees	8,955 (FY2024)
Chairman & Group CEO	Atsushi Horiba
Fiscal Year End	December 31

Chairman & Group CEO
Atsushi Horiba

Global Network

Sales by region (as of Dec 2024)

● : Major business hubs



Employee headcount by region (as of Dec 2024)

Number of companies (as of Dec 31, 2024)	Overseas sales ratio (as of Dec 31, 2024)	Foreign employee ratio (as of Dec 31, 2024)
47	**76%**	**64%**

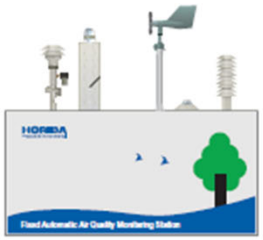
***Except for an equity-method affiliate**

HORIBA Air Quality Monitoring Line-up

Applications

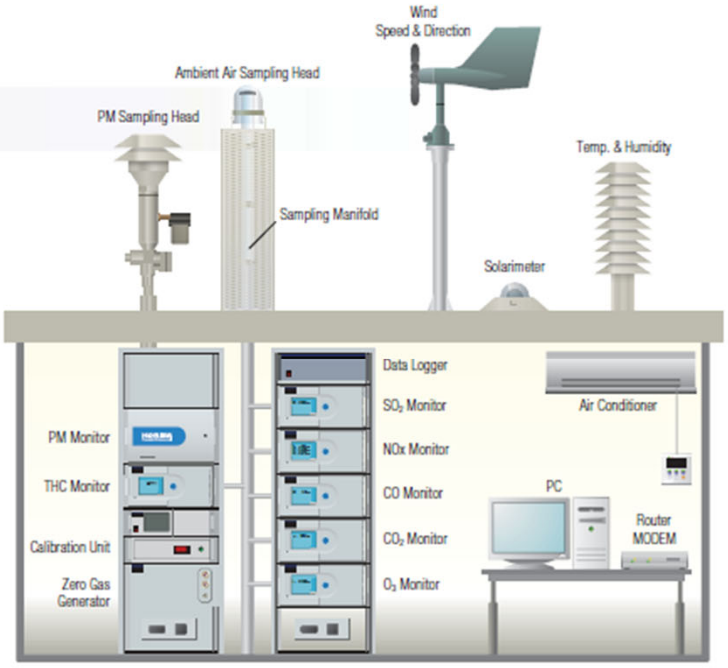
- Ambient air quality monitoring
- Greenhouse gas (GHG) research
- Vegetable factory

2 types of stations are available



Fixed Station

Mobile Station



Example of Air Quality Monitoring Station (AQMS)

Lineup:

NOx Monitor: APNA-380

SO_2 Monitor: APSA-380

CO Monitor: APMA-380

CO_2 Monitor: APCA-370

O_3 Monitor: APOA-380

THC Monitor: APHA-380

PM2.5/10 Monitor: APDA-372

Continue Particle Monitor with X-ray Fluorescence PX-375

Continuous analysis of PM2.5, PM10 or TSP, mass and the elemental concentration.
Sampling and the elemental analysis time : 30min +α

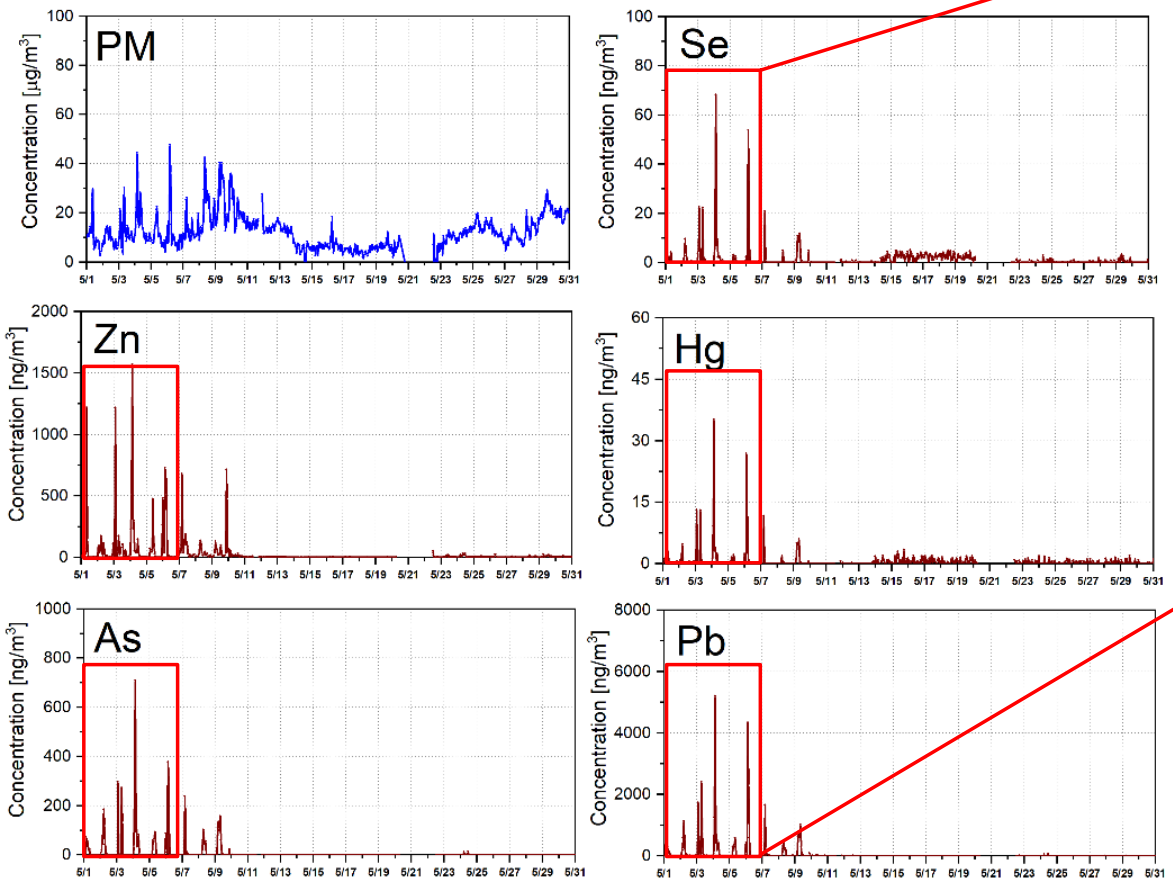
Detectable Elements (Table 2)

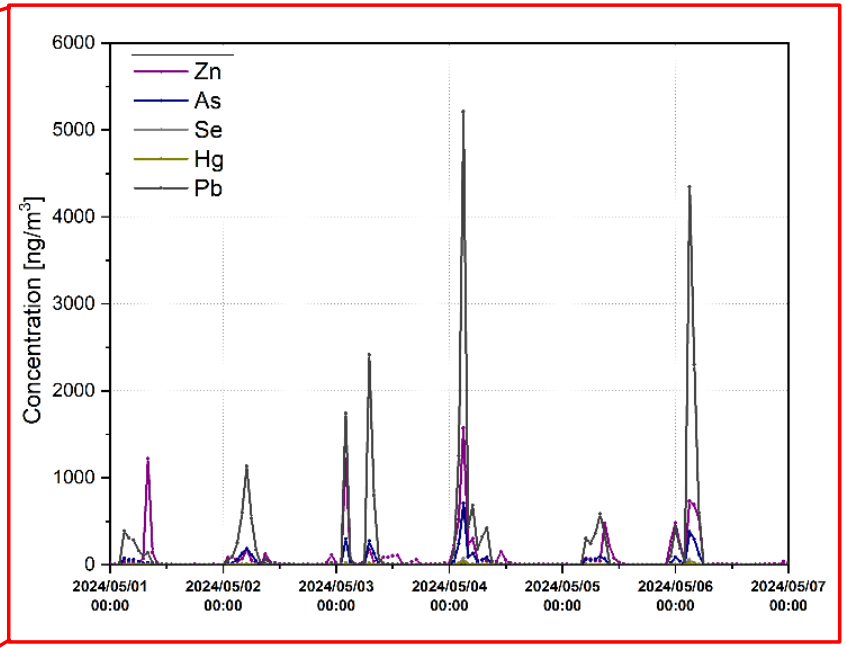
H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra		Rf	Ha	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Unt	Fl	Unp	Lv	Uus	Uno
lanthanoid			La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
actinoid			Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Detectable Elements

* ○—Standard parameters, calibrated by standard calibration materials.
* For measurement of element concentration calibration by standard calibration materials is needed.
* Please contact separately about elements, marked as non-detectable.

PX-375 Measurement Data





Mass occurrence every day from late at night to early morning

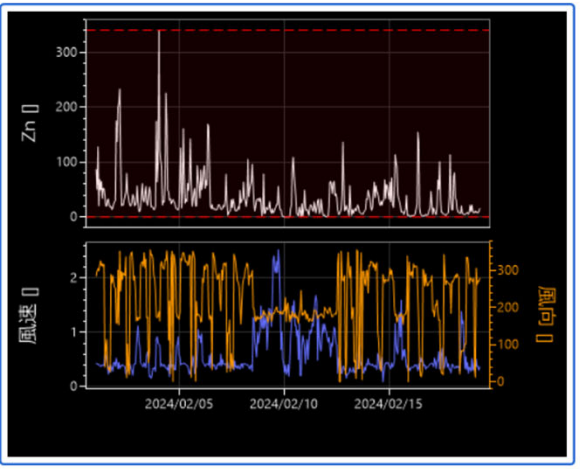
Zn As Se Hg Pb

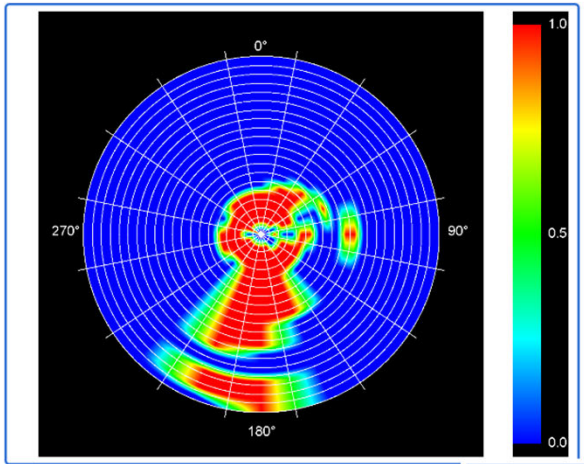
Maybe Coal Combustion issue

PX-375 Measurement Data

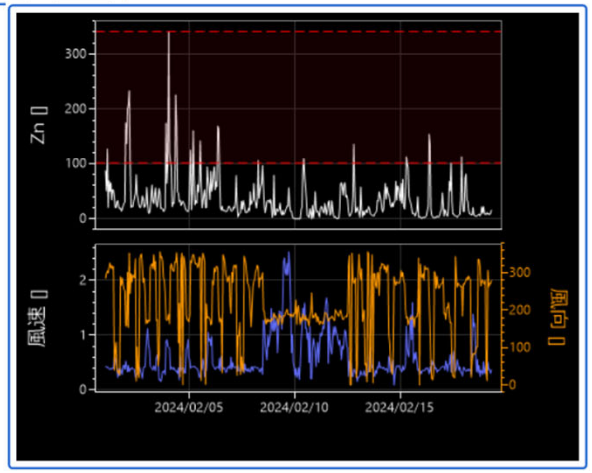
Wind direction and wind speed & Zn

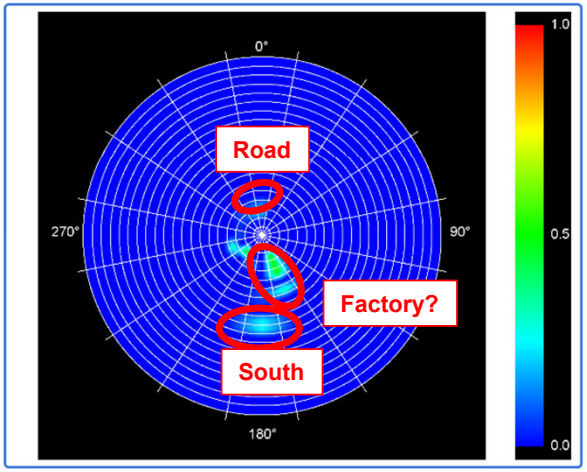
All Data





Only > 100 ng/m3





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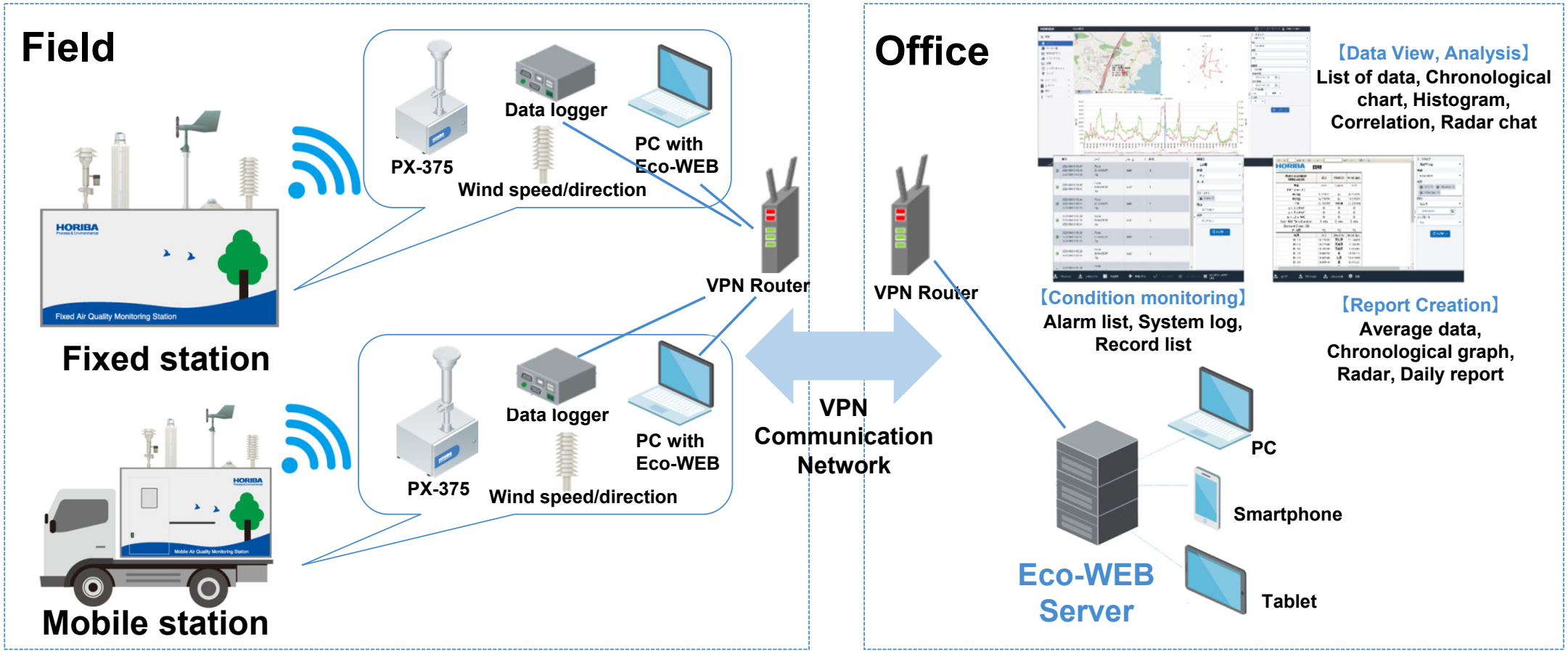
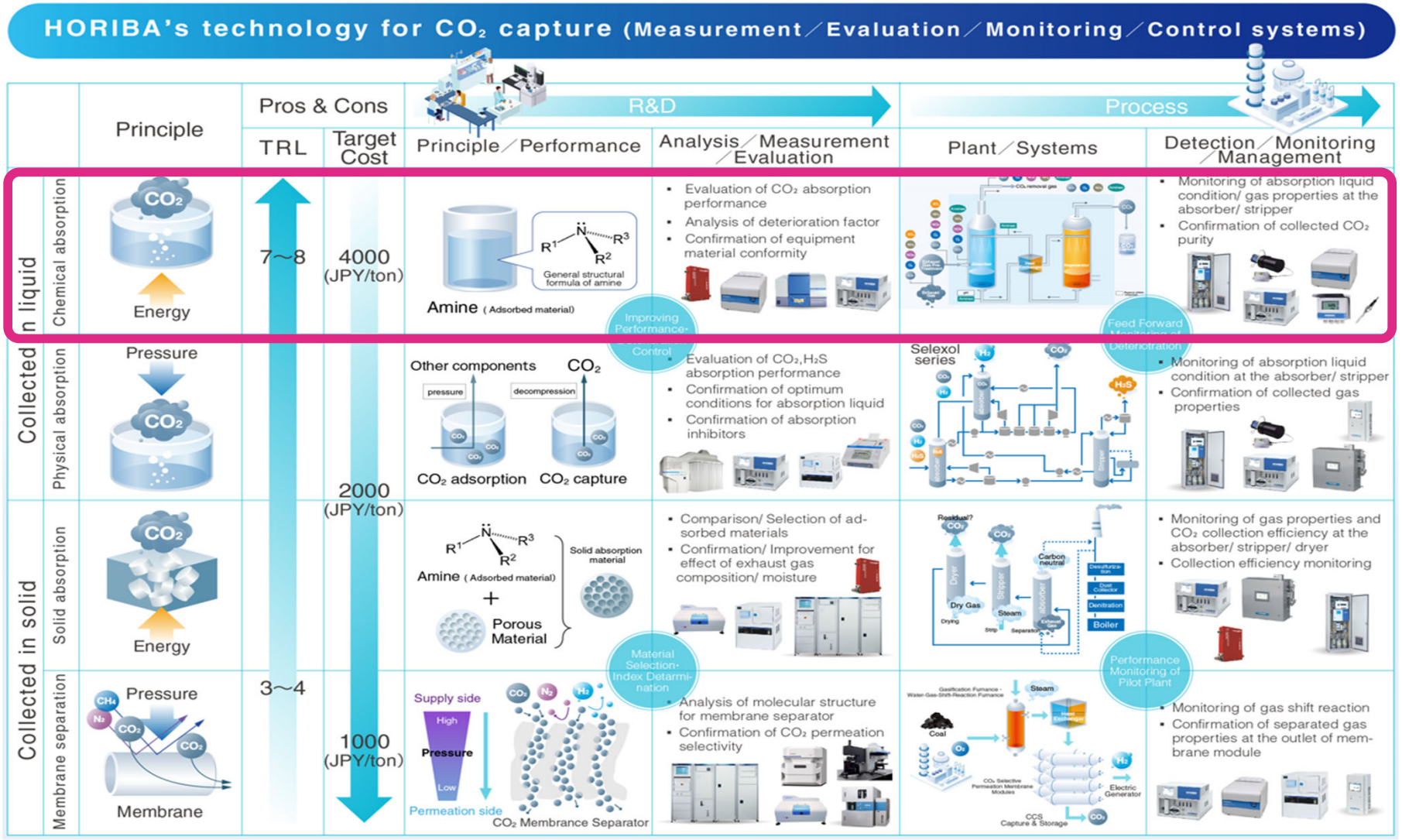
Step 6: For Feature Proposal



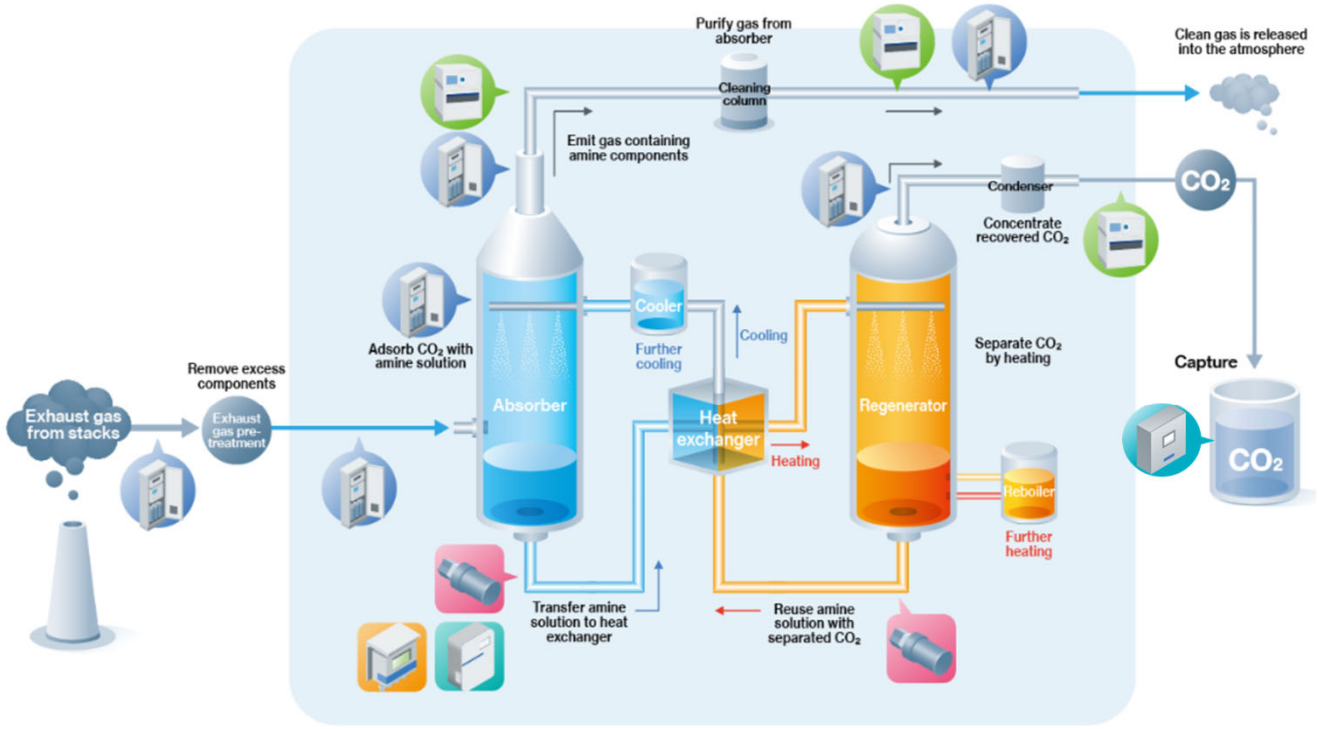
- Eco-WEB supports analysis of huge amount of data, visualization, creation of daily, weekly reports.
- Remote access from office, confirmation of status, alarms etc.

CO_2 capture technology and HORIBA solution



HORIBA solution for chemical absorption method

A variety of analyzers are required to achieve a highly efficient CO_2 separation and capture process



CO_2 separation / capture by **amine solution**

Gas

Stack gas analyzer ENDA-5000 series

Gas measurement in various process

Trace gas analyzer APNA-380/CU2

Impurity gas (amine etc.) measurement

Process Laser Gas Analyzer PLGA-1000

NO, NO_2 measurement in CO_2

Liquid

Probe Raman

Real-time monitoring of amine solution degradation

pH / Conductivity analyzer H-1 series

Easy monitoring the status of amine solution

TOC analyzer T-1 series

CO_2 measurement in amine solution

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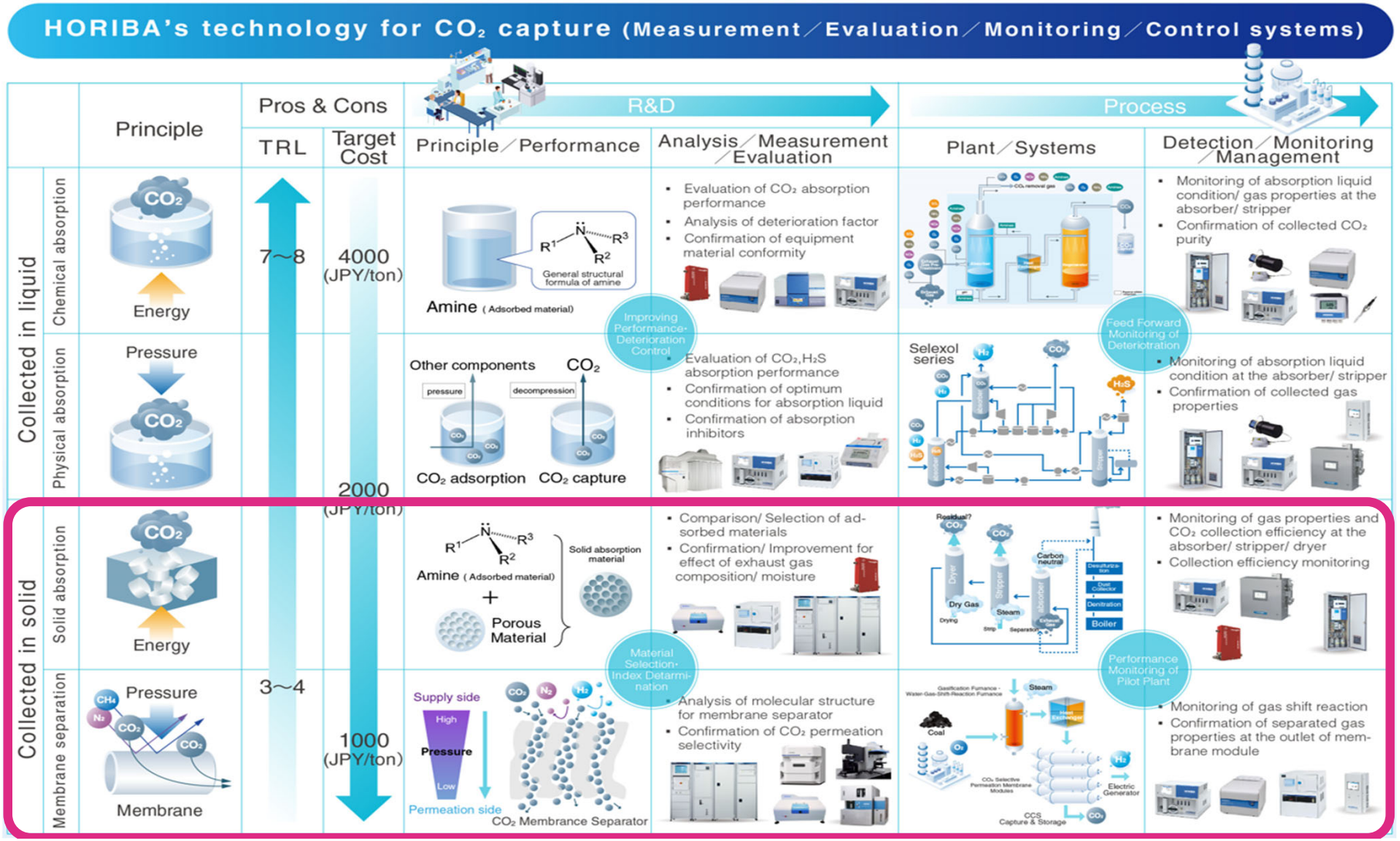
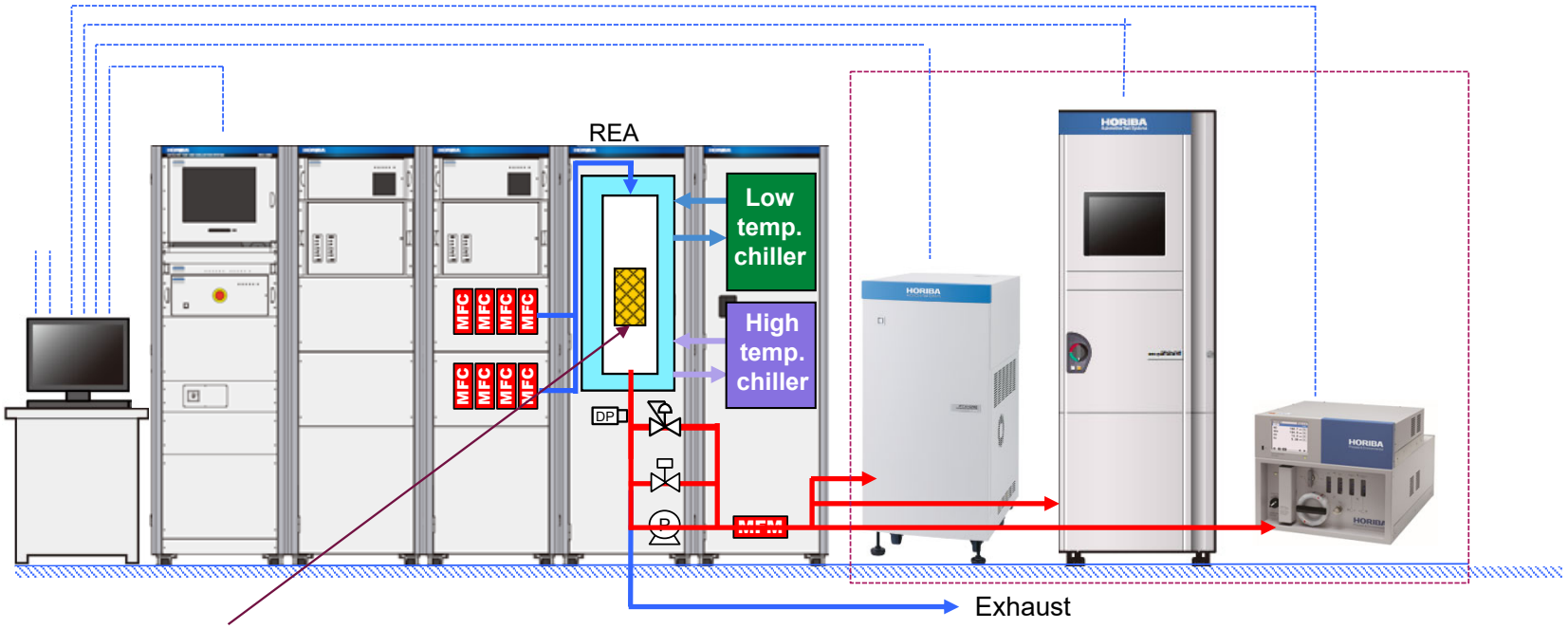
CO_2 capture technology and HORIBA solution



Catalyst Evaluation System (SIGU, CCEVA)

Applied to CO_2 adsorbent material evaluation



CO_2 Adsorbent Material

<Evaluation Parameters>
Concentration / Flow rate / Temperature / Pressure / Moisture

<Advantages of the Evaluation System>
Labor saving, time reduction, and improved reproducibility through automation

Omoshiro-okashiku

Joy and Fun

Terima kasih

谢谢

Gracias

Σας ευχαριστώ πάρα πολύ

Danke

Tack ska du ha

Grazie

THANK YOU

ধন্যবাদ

شُكْرًا

ขอบคุณครับ

Obrigado

Большое спасибо

ありがとうございました

Cảm ơn

Merci

감사합니다

Dziękuję

HORIBA